Hydrographic Unmanned Surface Craft

The Naval Oceanographic Office (NAVOCEANO) uses a variety of unmanned vehicles to collect oceanographic data. The newest addition is the Hydrographic Unmanned Surface Craft (HUSCy), a surface vehicle capable of conducting hydrographic single-beam bathymetry and side-scan sonar imaging and water quality sampling operations.

Operated by the Fleet Survey Team, the HUSCy is capable of autonomous or remotely controlled operations. This craft operates in shallow-water areas where human presence is undesirable and functions as a survey system that can be rapidly transported around the world and operated from any platform of opportunity with a minimal crew.

Developed for NAVOCEANO by a consortium between Seafloor Systems, Inc. and SeaRobotics Corp., the vehicle is constructed from commercially available components and technologies. The vehicle nominally weighs about 100 lb, has an aluminum catamaran structure measuring 10 ft by 5 ft and has a 4 ft by 2 ft cargo deck capable of carrying up to 100 lb of sensors. The vehicle can be readily broken down into smaller components, enabling the whole system to be shipped on short notice by air. The system has been configured to enable rapid mission turnaround and a low logistic footprint to a host unit.

Utilizing 2 kWh of battery power, the HUSCy is capable of deployments in excess of 8 hours at 3 kn. The system uses HyPack Max for mission planning, monitoring and data processing. Typically, the vehicle will be deployed carrying the following sensor packages:

Sensor	Purpose
Differential Global Positioning System (GPS)	Sub 3-meter accuracies (95%)
235-kHz Single-beam Echosounder and Heave Compensator	Depth soundings in excess of IHO Order 2 accuracies
300-kHz Marine Sonics Technologies Centurion side-scan sonar	Acoustic imagery of seabed and objects
Conductivity, Temperature and Depth and 530-nm Transmissometer sensor package	Vertical profiles to 150 meters of physical water properties
600-kHz RD Instruments Rio Grande Acoustic Doppler Current Profiling system	Two-dimensional (2D) vector water current information down to 50 meters
Freewave 900-MHz 115-KBPS line-of-sight data link	Limited data retrieval and online processing, and mission monitoring

Rev. 5/05